

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) An electric arc welder for creating a succession of AC waveforms between an electrode and workpiece by a power source comprising ~~an~~ a high frequency switching device for creating individual waveforms in said succession of waveforms, each of said individual waveforms having a profile determined by the magnitude of each of a large number of short current pulses generated at a frequency of at least 18 kHz by a pulse width modulator with the magnitude of said current pulses controlled by a wave shaper and the polarity of any portion of said individual waveforms determined by the data of a polarity signal, a profile control network ~~for establishing the~~ including a frequency setting circuit, a duty cycle setting circuit, an up-ramp rate setting circuit, and a down-ramp rate setting circuit, the profile control network configured to establish a general profile of an individual waveform by setting more than at least one profile parameter of an individual waveform, said parameters selected from ~~the~~ a class consisting of frequency, duty cycle, up ramp rate and down ramp rate, the parameters being set by selective use of the frequency setting circuit, the duty cycle setting circuit, the up-ramp rate setting circuit, and the down-ramp rate setting circuit, wherein each of the profile parameters are individually settable with respect to each of the other ones of the profile parameters, and a magnitude circuit for adjusting the individual waveform to set total current, voltage and/or power without substantially affecting the general fixed profile.

2. (Original) An electric arc welder as defined in claim 1 wherein said

magnitude circuit has a first section for adjusting said individual waveform during the positive polarity of said one waveform and a second section for adjusting said individual waveform during the negative polarity of said AC waveform.

3. (Original) An electric arc welder as defined in claim 2 including a device for selecting current, voltage or power in said first section of said magnitude circuit.

4. (Original) An electric arc welder as defined in claim 3 including a device for selecting current, voltage or power in said second section of said magnitude circuit.

5. (Original) An electric arc welder as defined in claim 2 including a device for selecting current, voltage or power in said second section of said magnitude circuit.

6. (Original) An electric arc welder as defined in claim 5 wherein said profile control network sets at least three of said profile parameters.

7. (Original) An electric arc welder as defined in claim 4 wherein said profile control network sets at least three of said profile parameters.

8. (Original) An electric arc welder as defined in claim 3 wherein said profile control network sets at least three of said profile parameters.

9. (Original) An electric arc welder as defined in claim 2 wherein said profile control network sets at least three of said profile parameters.

10. (Original) An electric arc welder as defined in claim 1 wherein said profile control network sets at least three of said profile parameters.

11. (Original) An electric arc welder as defined in claim 5 wherein said profile control network set all four of said named profile parameters.

12. (Original) An electric arc welder as defined in claim 4 wherein said profile control network set all four of said named profile parameters.

13. (Original) An electric arc welder as defined in claim 3 wherein said profile control network set all four of said named profile parameters.

14. (Original) An electric arc welder as defined in claim 2 wherein said profile control network set all four of said named profile parameters.

15. (Original) An electric arc welder as defined in claim 1 wherein said profile control network set all four of said named profile parameters.

16. (Currently amended) A method of electric arc welding by creating a

succession of AC waveforms between an electrode and workpiece by a power source comprising an a high frequency switching device for creating individual waveforms in said succession of waveforms, each of said individual waveforms having a profile determined by the magnitude of each of a large number of short current pulses generated at a frequency of at least 18 kHz by a pulse width modulator with the magnitude of said current pulses controlled by a wave shaper, said method comprising:

(a) determining the polarity of any portion of said individual waveforms by the data of a polarity signal;

(b) establishing the general profile of an individual waveform by individually setting more than at least one profile parameter of an individual waveform, said parameters selected from the class consisting of frequency, duty cycle, up ramp rate and down ramp rate, wherein each of the profile parameters are independently settable from each of the other profile parameters; and,

(c) adjusting the waveform profile to set total magnitude of current, voltage and/or power without substantially changing the general profile.

17. (Original) A method as defined in claim 16 including the acts of:

(d) adjusting the magnitude of said individual waveform during the positive polarity of said AC waveform; and,

(e) adjusting the magnitude of said individual waveform during the negative polarity of said AC waveform.

18. (Original) A method as defined in claim 17 including the act of:

(f) selecting current, voltage or power for magnitude control during said positive polarity.

19. (Original) A method as defined in claim 17 including the act of:

(g) selecting current, voltage or power for magnitude control during said negative polarity.

20. (Original) A method as defined in claim 16 including the act of:

(d) adjusting the magnitude of said individual waveform during the positive polarity of said AC waveform.

21. (Original) A method as defined in claim 16 including the act of:

(d) adjusting the magnitude of said individual waveform during the negative polarity of said AC waveform.

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Currently amended) An electric arc welder for creating a succession of AC waveforms between an electrode and a workpiece by a power source comprising an a high frequency switching device for creating individual waveforms in said succession of waveforms, each of said individual waveforms having a profile determined by the magnitude of each of a large number of short current pulses generated at a frequency of at least 18 kHz by a pulse width modulator with the magnitude of said current pulses controlled by a wave shaper and the polarity of any portion of said individual waveform determined by the data of a polarity signal, and a profile control network, including a frequency setting circuit, a duty cycle setting circuit, an up-ramp rate setting circuit, and a down-ramp rate setting circuit to control the general profile of said individual waveform.

29. (New) An electric arc welder as defined in claim 1, wherein the profile control network is configured to control the individual waveform on a real time basis by adjustment of the profile parameters for individual sections of the individual waveform.

30. (New) An electric arc welder as defined in claim 1, further including power supplies of the electric arc welder being formed as parallel power supplies.

31. (New) An electric arc welder as defined in claim 1, wherein the profile

control network is configured to permit setting of values for the profile parameters when a solid electrode is used in the welding process, which are different from values set for the profile parameters when a cored electrode is used in the welding process.

32. (New) A method as defined in claim 16, wherein the profile control network is configured to control the individual waveform on a real time basis by adjustment of the profile parameters for individual sections of the individual waveform.

33. (New) A method as defined in claim 16, wherein the step of establishing the general profile includes individually setting more than one profile parameter based on a type of electrode to be used in the welding process.

34. (New) An electric arc welder as defined in claim 28, wherein the profile control network is configured to control the individual waveform on a real time basis by adjustment of the profile parameters for individual sections of the individual waveform.

35. (New) An electric arc welder as defined in claim 28, further including power supplies of the electric arc welder being formed as parallel power supplies.

36. (New) An electric arc welder as defined in claim 28, wherein the profile control network is configured to permit setting of values for the profile parameters when a solid electrode is used in the welding process, which are different from values set for the profile parameters when a cored electrode is used in the welding process.